PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference Case 22212 WO	**FOR FURTHER ACTION**	See Form PCT/IPEA/416
International application No. PCT/EP2004/010283	International filing date *(day/month/year)* 15.09.2004	Priority date *(day/month/year)* 23.09.2003
International Patent Classification (IPC) or national classification and IPC A23L1/30, A61P3/04, A61K35/78, A61P3/10		
Applicant DSM IP ASSETS B.V. et al		

1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 7 sheets, including this cover sheet.
3. This report is also accompanied by ANNEXES, comprising:
   a. ☒ *sent to the applicant and to the International Bureau)* a total of 2 sheets, as follows:
      ☒ sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).
      ☐ sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.
   b. ☐ *(sent to the International Bureau only)* a total of (indicate type and number of electronic carrier(s)) , containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).

4. This report contains indications relating to the following items:

☒	Box No. I	Basis of the opinion
☐	Box No. II	Priority
☒	Box No. III	Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
☐	Box No. IV	Lack of unity of invention
☒	Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
☒	Box No. VI	Certain documents cited
☐	Box No. VII	Certain defects in the international application
☐	Box No. VIII	Certain observations on the international application

Date of submission of the demand	Date of completion of this report
24.03.2005	24.01.2006
Name and mailing address of the international preliminary examining authority: European Patent Office - P.B. 5818 Patentlaan 2 NL-2280 HV Rijswijk - Pays Bas Tel. +31 70 340 - 2040 Tx: 31 651 epo nl Fax: +31 70 340 - 3016	Authorized Officer Lepretre, F Telephone No. +31 70 340-2994

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.
PCT/EP2004/010283

Box No. I Basis of the report

1. With regard to the **language**, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.

   ☐ This report is based on translations from the original language into the following language , which is the language of a translation furnished for the purposes of:
   - ☐ international search (under Rules 12.3 and 23.1(b))
   - ☐ publication of the international application (under Rule 12.4)
   - ☐ international preliminary examination (under Rules 55.2 and/or 55.3)

2. With regard to the **elements*** of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report)*:

   Description, Pages

   1-14 as originally filed

   Claims, Numbers

   1-18 received on 26.03.2005 with letter of 21.03.2005

   ☐ a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing

3. ☐ The amendments have resulted in the cancellation of:
   - ☐ the description, pages
   - ☐ the claims, Nos.
   - ☐ the drawings, sheets/figs
   - ☐ the sequence listing *(specify)*:
   - ☐ any table(s) related to sequence listing *(specify)*:

4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).
   - ☐ the description, pages
   - ☐ the claims, Nos.
   - ☐ the drawings, sheets/figs
   - ☐ the sequence listing *(specify)*:
   - ☐ any table(s) related to sequence listing *(specify)*:

* *If item 4 applies, some or all of these sheets may be marked "superseded."*

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.
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Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability

1. The questions whether the claimed invention appears to be novel, to involve an inventive step (to be non-obvious), or to be industrially applicable have not been examined in respect of:

☐ the entire international application,

☒ claims Nos. 12,13 with respect to industrial applicability

because:

☒ the said international application, or the said claims Nos. 12,13 relate to the following subject matter which does not require an international preliminary examination (specify):

see separate sheet

☐ the description, claims or drawings *(indicate particular elements below)* or said claims Nos. are so unclear that no meaningful opinion could be formed *(specify)*:

☐ the claims, or said claims Nos. are so inadequately supported by the description that no meaningful opinion could be formed.

☐ no international search report has been established for the said claims Nos.

☐ the nucleotide and/or amino acid sequence listing does not comply with the standard provided for in Annex C of the Administrative Instructions in that:

the written form	☐	has not been furnished
	☐	does not comply with the standard
the computer readable form	☐	has not been furnished
	☐	does not comply with the standard

☐ the tables related to the nucleotide and/or amino acid sequence listing, if in computer readable form only, do not comply with the technical requirements provided for in Annex C-*bis* of the Administrative Instructions.

☐ See separate sheet for further details

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.
PCT/EP2004/010283

Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes:	Claims	1-18
	No:	Claims	
Inventive step (IS)	Yes:	Claims	1-18
	No:	Claims	
Industrial applicability (IA)	Yes:	Claims	1-11,14-18
	No:	Claims	

2. Citations and explanations (Rule 70.7):

see separate sheet

Box No. VI Certain documents cited

1. Certain published documents (Rule 70.10)

and / or

2. Non-written disclosures (Rule 70.9)

see separate sheet

Re Item III

Claims 12 and 13 relate to subject-matter considered by this Authority to be covered by the provisions of Rule 67.1(iv) PCT. Consequently, no opinion will be formulated with respect to the industrial applicability of the subject-matter of these claims (Article 34(4)(a)(I) PCT).

Re Item V

Reasoned statement with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

Reference is made to the following documents:

D1: WPI abstract of JP 05 292 885 A
D2: N. Shirai et al, Nutrition Research 23 (2003) pp 959-969
D3: PAJ abstract of JP 02 243 622
D4: WO02/72086
D5: WO02/39822

1. Novelty

1.1. The document D1 discloses (the references in parentheses applying to this document): A composition comprising in combination a catechin and DHA or EPA (abstract). D1 does not disclose the presence of a PPARγ ligand selected from the group of thiazolidinediones, ligustilide and phytanic acid.
D1 does not disclose the use of a catechin found in green tea and PPARγ ligand in the manufacture of a nutraceutical composition for the treatment or prevention of diabetes and/or obesity and syndrome X.

1.2. A composition comprising tea catechins and DHA is also known form D2 (see abstract and paragraph 2).
D2 does not disclose however the presence of a PPARγ ligand selected from the group of thiazolidinediones, ligustilide and phytanic acid.

D2 does not disclose the use of a catechin found in green tea and PPARγ ligand in the manufacture of a nutraceutical composition for the treatment or prevention of diabetes and/or obesity and syndrome X.

1.3 The document D5 (claims, example 6) describes packaged beverages comprising epigallocatechin gallate, gallocatechin gallate, epigallocatechin or gallocatechin which have PPAR-dependent gene transcription activating effects and which are effective for prevention and alleviation of obesity.
However D5 does not disclose the use of a catechin found in green tea and PPARγ ligand in the manufacture of a nutraceutical composition for the treatment or prevention of diabetes and/or obesity and syndrome X, nor the use of catechin found in green tea
in the manufacture of a nutraceutical composition for concomitant consumption during treatment or prevention of diabetes and/or obesity and syndrome X by administration of a PPARγ ligand.

The subject-matter of independent claims 1,8 and 14 is therefore novel in the sense of Article 33(2) PCT.

2. Inventive step

2.1. The combination of the features of independent claims 1,8 and 14 is neither known from, nor rendered obvious by, the available prior art. The reasons are as follows:

A composition comprising the specific PPARγ ligand (thiazolidinedione) and a catechin found in green tea is not disclosed in the available prior art. Although EGCG are disclosed in D4 as useful in the treatment of obesity (see claims 1 and 4) it would not be obvious to a person skilled in the art to combine EGCG with the specific PPARγ ligand such as thiazolidinedione to solve the problem posed viz. the increased fat accumulation and weight gain associated with Type 2 diabetes treatment using PPARγ agonists.
D5 being considered as the closest prior art with regard to the subject matter of claims 1 and 8, the skilled person would not find any hint in D5 to use a PPARγ ligand in combination with a catechin found in green tea to solve the problem of preventing or treating diabetes and conditions associated with impaired glucose tolerance such as syndrome X and obesity.

Claims 2-7, 9-11, and 15-18 are dependent respectively on claims 1,8 and 14 and as such also meet the requirements of the PCT with respect to novelty and inventive step.

Re Item VI

Certain documents cited

Certain published documents

Application No Patent No	Publication date *(day/month/year)*	Filing date *(day/month/year)*	Priority date *(valid claim)* *(day/month/year)*
WO2004/041257	21-04-2004	30-09-2003	07-11-2002

What is claimed is:

1. Use of a catechin found in green tea and a PPARγ ligand in the manufacture of a nutraceutical composition for the treatment or prevention of diabetes and/or obesity and syndrome X.

2. The use as in claim 1 wherein the PPARγ ligand is a full agonist, a partial agonist, a selective PPARγ modulator/agonist, a PPARγ dual agonist or panagonist.

3. The use as in claim 1 or 2 wherein the PPARγ ligand is a thiazolidinedione, preferably selected from the group consisting of ciglitazone, rosiglitazone and pioglitazone.

4. The use as in any of claims 1 - 3 wherein the PPARγ ligand is a natural PPARγ agonist.

5. The use as in any of claims 1 - 4 wherein the PPARγ ligand is a PUFA, preferably selected from the group consisting of eicosapentaenoic acid and docosahexaenoic acid.

6. The use as in claim 1, 2 and/or 4 wherein the PPARγ ligand is ligustilide.

7. The use as in claim 1, 2 and/or 4 wherein the PPARγ ligand is phytanic acid.

8. Use of a catechin found in green tea in the manufacture of a nutraceutical composition for concomitant consumption during treatment or prevention of diabetes and/or obesity and syndrome X by administration of a PPARγ ligand.

9. The use as in claim 8 wherein the nutraceutical composition is a food or beverage or a supplement composition for a food or beverage.

10. The use as in claim 8 wherein the nutraceutical composition is a pharmaceutical composition.

MST 17.03.2005

11. The use as in any one of claims 8-10 wherein the catechin is (-) epigallocatechin gallate.

12. A method for the treatment or prevention of diabetes or obesity and syndrome X which comprises administering to a subject in need of such treatment an effective amount of a catechin found in green tea and of a PPARγ ligand.

13. The method as in claim 12 wherein the catechin is (-) epigallocatechin gallate.

14. A composition comprising a catechin found in green tea, and a peroxisome proliferator-activated receptor gamma (PPARγ) ligand selected from the group consisting of thiazolidinediones, ligustilide and phytanic acid.

15. A composition as in claim 14 wherein the catechin is (-) epigallocatechin gallate.

16. A composition as in any of claims 14-15, wherein the thiazolidinedione is ciglitazone, rosiglitazone or pioglitazone.

17. A composition as in any one of claims 15-16 wherein (-) epigallocatechin gallate is present in an amount sufficient to administer to a human adult a daily dosage of about 10 mg to about 2000 mg .

18. A composition as in any one of claims 14-17 which is a nutraceutical composition.

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